ProCurve
Networking by HP

ProCurve Switch 5400zl/3500yl Series

The ProCurve Switch 5400zl/3500yl series consists of the most advanced intelligent edge switches in the ProCurve Networking product line. The 5400zl series includes 6-slot and 12-slot chassis and associated zl modules and bundles, and the 3500yl series includes 24-port and 48-port stackables. The foundation for all these switches is a purpose-built, programmable ProVision ASIC that allows the most demanding networking features, such as QoS and security, to be implemented in a scalable yet granular fashion. With a variety of Gigabit interfaces, integrated PoE on all 10/100/1000Base-T ports, 10-GbE capability, and a choice of form factors, the 5400zl/3500yl switches offer excellent investment protection, flexibility, and scalability, as well as ease of deployment, operation, and maintenance.

ProCurve Switch 5406zl
Intelligent Edge (J8697A)

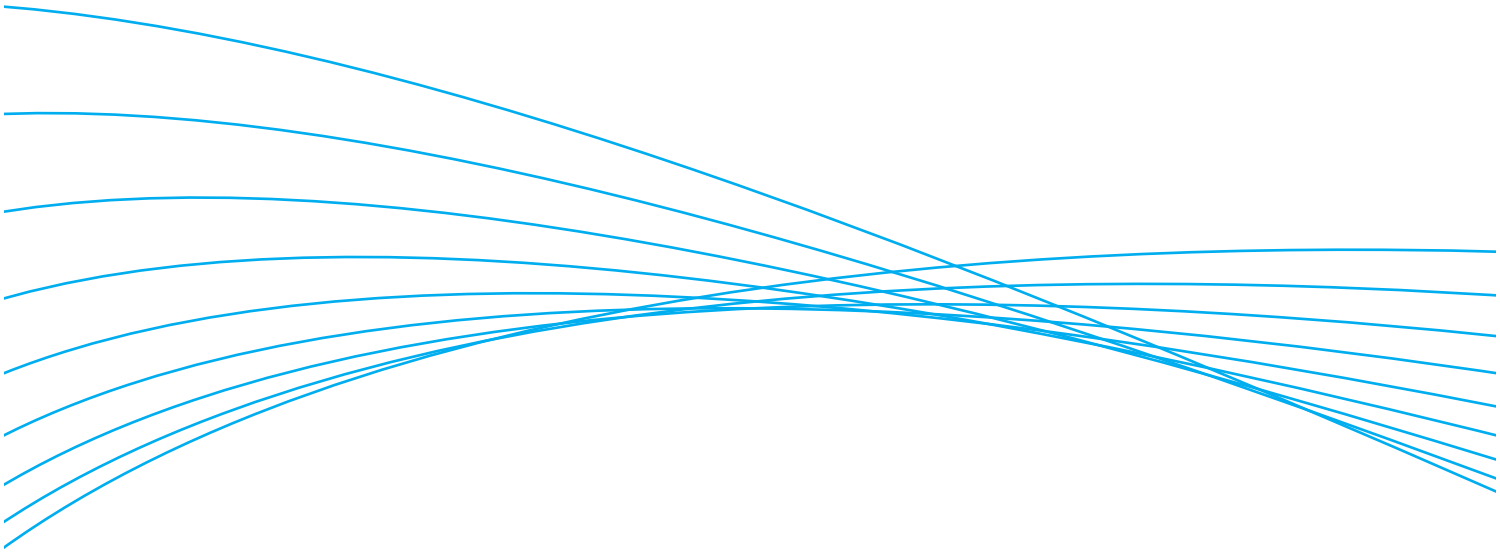
ProCurve Switch 5406zl-48G
Intelligent Edge (J8699A)

ProCurve Switch 5412zl
Intelligent Edge (J8698A)

ProCurve Switch 5412zl-96G
Intelligent Edge (J8700A)

ProCurve Switch
3500yl-24G-PWR
Intelligent Edge (J8692A)

ProCurve Switch
3500yl-48G-PWR
Intelligent Edge (J8693A)



hp invent

Features and benefits

Industry-leading warranty

Management

NEW **Remote intelligent mirroring**: mirrors selected ingress/egress traffic based on ACL, port, MAC address, or VLAN to a local or remote 8200zl/6200yl/5400zl/3500yl switch anywhere on the network

- **RMON, XRMON, and sFlow v5**: provide advanced monitoring and reporting capabilities for statistics, history, alarms, and events
- **IEEE 802.1AB Link Layer Discovery Protocol (LLDP)**: automated device discovery protocol for easy mapping by network management applications
- **Command authorization**: leverages RADIUS to link a custom list of CLI commands to individual network administrator's login; also provides an audit trail
- **Friendly port names**: allow assignment of descriptive names to ports
- **Dual flash images**: provides independent primary and secondary OS files for backup while upgrading
- **Multiple configuration files**: multiple config files can be stored to the flash image
- **Uni-Directional Link Detection (UDLD)**: monitors a link between two switches and blocks the ports on both ends of the link if the link goes down at any point between the two devices
- **Management simplicity**: ProCurve-common networking features and CLI implementation (common across ProCurve zl and yl switches)

Connectivity

NEW **IPv6**:

- **IPv6 Host**: the switches can be managed and deployed at the edge of IPv6 networks
- **Dual Stack (IPv4/IPv6)**: provides transition mechanism from IPv4 to IPv6; supports connectivity for both protocols
- **MLD Snooping**: forwards IPv6 multicast traffic to the appropriate interface; prevents IPv6 multicast traffic from flooding the network
- **IPv6 ready**: the switch hardware can support IPv6 QoS, ACL, routing, tunneling, and security; these features will be available when enabled via software update in follow-on releases

- **IEEE 802.3af Power over Ethernet**: provides up to 15.4 W per port to IEEE 802.3af compliant PoE powered devices such as IP phones, wireless access points, and security cameras
- **Pre-standard PoE support**: detects and provides power to pre-standard PoE devices; see list of supported devices in the product FAQ at www.procurve.com
- **Jumbo frames**: on Gigabit and 10-Gigabit ports, allow high-performance remote backup and disaster-recovery services
- **Auto-MDIX**: automatically adjusts for straight-through or crossover cables on all 10/100/1000 ports

Performance

- **5400zl/3500yl architecture**: 115 to 692 Gbps crossbar switching fabric provides intra- and inter-module switching with 36 to 428 million pps throughput on the purpose-built ProVision ASICs

♦ For as long as you own the product, with next-business-day advance replacement (available in most countries). For details, refer to the ProCurve Software Licence, Warranty and Support booklet at **www.procurve.eu/warranty**

- **Selectable queue configurations**: increase performance by selecting the number of queues and associated memory buffering that best meet the requirements of your network applications

Resiliency and high availability

- **Virtual Router Redundancy Protocol (requires Premium License)**: VRRP allows groups of two routers to dynamically back each other up to create highly available routed environments
- **IEEE 802.1s Multiple Spanning Tree Protocol**: provides high link availability in multiple VLAN environments by allowing multiple spanning trees; encompasses IEEE 802.1D Spanning Tree Protocol and IEEE 802.1w Rapid Spanning Tree Protocol
- **IEEE 802.3ad Link Aggregation Control Protocol (LACP) and ProCurve trunking**: support up to 36 trunks, each with up to 8 links (ports) per trunk; trunking across modules is supported
- **Hot-swappable modules (5400zl series)**: permits modules, mini-GBICs, and power supplies in a redundant power supply configuration to be added or swapped without interrupting the network
- **Optional redundant power supply (5400zl series)**: provides uninterrupted power and allows hot-swapping of the redundant power supplies when installed
- **Sparing simplicity**: ProCurve zl-common accessories (interface modules, power supplies)

Layer 2 switching

- NEW **IEEE 802.1ad Q-in-Q (requires Premium License)**: increases the scalability of Ethernet network by providing a hierarchical structure; connects multiple LANs on high-speed campus or metro network
- **ProCurve switch meshing**: dynamically load-balances across multiple active redundant links to increase available aggregate bandwidth
- **VLAN support and tagging**: supports the IEEE 802.1Q standard and 2,048 VLANs simultaneously
- **IEEE 802.1v protocol VLANs**: isolate select non-IPv4 protocols automatically into their own VLANs
- **GARP VLAN Registration Protocol**: allows automatic learning and dynamic assignment of VLANs

Layer 3 services

- **UDP helper function**: UDP broadcasts can be directed across router interfaces to specific IP unicast or subnet broadcast addresses and prevent server spoofing for UDP services such as DHCP
- **Loopback interface address**: defines an address in RIP and OSPF that can always be reachable, improving diagnostic capability

Layer 3 routing

- **Static IP routing**: provides manually configured routing
- **RIP**: provides RIPv1 and RIPv2 routing at media speed
- **OSPF (requires Premium License)**: includes host-based ECMP to provide link redundancy/scalable bandwidth and NSSA

Security

- NEW **USB Secure Autorun* (requires ProCurve Manager Plus)**: deploys, diagnoses, and updates switch using USB flash drive; works with secure credential to prevent tampering
- **Switch CPU protection**: provides automatic protection against malicious network traffic trying to shut down the switch

* Availability targeted for the second quarter of 2008.

Features and benefits (continued)

- **Virus throttling**: detects traffic patterns typical of WORM-type viruses and either throttles or entirely prevents the ability of the virus to spread across the routed VLANs or bridged interfaces, without requiring external appliances
- **ICMP throttling**: defeats ICMP denial-of-service attacks by enabling any switch port to automatically throttle ICMP traffic
- **Multiple user authentication methods**:
  - **IEEE 802.1X**: industry-standard way of user authentication using an IEEE 802.1X supplicant on the client in conjunction with a RADIUS server
  - **Web-based authentication**: authenticates from Web browser for clients that do not support 802.1X supplicant; customized remediation can be processed on an external Web server
  - **MAC-based authentication**: client is authenticated with the RADIUS server based on client's MAC address
- **Authentication flexibility**:
  - **Multiple IEEE 802.1X users per port**: provides authentication of multiple IEEE 802.1X users per port; prevents user "piggybacking" on another user's IEEE 802.1X authentication
  - **Concurrent IEEE 802.1X and Web or MAC authentication schemes per port**: switch port will accept any of IEEE 802.1X and either Web or MAC authentications
- **Access control lists (ACLs)**: provide filtering based on the IP field, source/destination IP address/subnet, and source/destination TCP/UDP port number on a per-VLAN or per-port basis
- **Identity-driven ACL**: enables implementation of a highly granular and flexible access security policy specific to each authenticated network user
- **DHCP protection**: blocks DHCP packets from unauthorized DHCP servers, preventing denial-of-service attacks
- **BPDU port protection**: blocks Bridge Protocol Data Units (BPDU) on ports that do not require BPDUs, preventing forged BPDU attacks
- **Dynamic IP lockdown**: works with DHCP protection to block traffic from unauthorized host, preventing IP source address spoofing
- **Dynamic ARP protection**: blocks ARP broadcasts from unauthorized hosts, preventing eavesdropping or theft of network data

NEW **STP Root Guard**: protects root bridge from malicious attack or configuration mistakes

- **Detection of malicious attacks**: monitors 10 types of network traffic and sends a warning when an anomaly that potentially can be caused by malicious attacks is detected
- **Port security**: allows access only to specified MAC addresses, which can be learned or specified by the administrator
- **MAC address lockout**: prevents configured particular MAC addresses from connecting to the network
- **Source-port filtering**: allows only specified ports to communicate with each other
- **TACACS+**: eases switch management security administration by using a password authentication server
- **Secure Shell (SSHv2)**: encrypts all transmitted data for secure, remote command-line interface (CLI) access over IP networks
- **Secure Sockets Layer (SSL)**: encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch

- **Secure FTP**: allows secure file transfer to/from the switch; protects against unwanted file downloads or unauthorized copying of switch configuration file
- **Secure management access**: all access methods—CLI, GUI, or MIB—are securely encrypted through SSHv2, SSL, and/or SNMPv3
- **Switch management logon security**: can require either RADIUS or TACACS+ authentication for secure switch CLI logon
- **Security banner**: displays a customized security policy when users log in to the switch

Convergence

- **IP multicast routing (Premium License)**: includes PIM Sparse and Dense modes to route IP multicast traffic
- **IP multicast snooping (data-driven IGMP)**: automatically prevents flooding of IP multicast traffic
- **LLDP-MED (Media Endpoint Discovery)**: a standard extension of LLDP that stores values for parameters such as QoS and VLAN to automatically configure network devices such as IP phones

NEW **RADIUS VLAN for voice**: uses standard RADIUS attribute and LLDP to automatically configure VLAN for IP phones

NEW **PoE allocations**: supports multiple methods (automatic, 802.3af class, LLDP-MED, or user specified) to allocate PoE power for optimal energy saving

Quality of Service (QoS)

- **Layer 4 prioritization**: enables prioritization based on TCP/UDP port numbers
- **Traffic prioritization**: allows real-time traffic classification into 8 priority levels mapped to 8 queues
- **Bandwidth shaping**:
  - **Port-based rate limiting**: per-port ingress/egress enforced maximum bandwidth
  - **Classified-based rate limiting**: use ACL to enforce maximum bandwidth for ingress traffic on each port
  - **Guaranteed minimum**: per-port, per-queue egress-based guaranteed minimum bandwidth
- **Class of Service (CoS)**: sets the IEEE 802.1p priority tag based on IP address, IP Type of Service (ToS), L3 protocol, TCP/UDP port number, source port, and DiffServ

Services

ProCurve Switch 3500yl-24G-PWR Intelligent Edge

- 3-year, 4-hour onsite, 13x5 coverage for hardware (U2855E)
- 3-year, 4-hour onsite, 24x7 coverage for hardware (U2856E)
- 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6304E)
- 3-year, 24x7 software phone support, software updates (UE262E)
- Installation with minimum configuration, system-based pricing (U4826E)
- Installation with HP-provided configuration, system-based pricing (U4830E)

Services (continued)

ProCurve Switch 3500yl-48G-PWR Intelligent Edge

- 3-year, 4-hour onsite, 13x5 coverage for hardware (H4496E)
- 3-year, 4-hour onsite, 24x7 coverage for hardware (H2893E)
- 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6319E)
- 3-year, 24x7 software phone support, software updates (UE264E)
- Installation with minimum configuration, system-based pricing (U4826E)
- Installation with HP-provided configuration, system-based pricing (U4830E)

ProCurve Switch 5406zl Intelligent Edge
ProCurve Switch 5406zl-48G Intelligent Edge

- 3-year, 4-hour onsite, 13x5 coverage for hardware (UE250E)
- 3-year, 4-hour onsite, 13x5 coverage for hardware (H4496E)
- 3-year, 4-hour onsite, 24x7 coverage for hardware (UE251E)
- 3-year, 4-hour onsite, 24x7 coverage for hardware (H2893E)
- 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (U6319E)
- 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UE252E)
- 3-year, 24x7 software phone support, software updates (UF786E)
- Installation with minimum configuration, system-based pricing (U4828E)
- Installation with HP-provided configuration, system-based pricing (U4832E)

ProCurve Switch 5412zl Intelligent Edge
ProCurve Switch 5412zl-96G Intelligent Edge

- 3-year, 4-hour onsite, 13x5 coverage for hardware (UE253E)
- 3-year, 4-hour onsite, 24x7 coverage for hardware (UE254E)
- 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UE255E)
- 3-year, 24x7 software phone support, software updates (UF788E)
- Installation with minimum configuration, system-based pricing (U4828E)
- Installation with HP-provided configuration, system-based pricing (U4832E)

Check **www.procurve.eu/services** for part numbers and service-level descriptions.
For details about services and response times in your area, please contact your local HP sales office.

ProCurve Switch 5400zl/3500yl Series

Specifications

	ProCurve Switch 5406zl Intelligent Edge (J8697A)	ProCurve Switch 5406zl-48G Intelligent Edge (J8699A)
Included accessories	N/A	2 ProCurve Switch zl 24-Port 10/100/1000 PoE Modules (J8702A) 1 ProCurve Switch zl 875W Power Supply (J8712A)
Ports	6 open module slots 1 RS-232C DB-9 console port Supports a maximum of 144 auto-sensing 10/100/1000 ports or 24 10-GbE ports or 144 mini-GBICs, or a combination	4 open module slots 48 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) with PoE Media type: IEEE Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 1 RS-232C DB-9 console port Supports a maximum of 144 auto-sensing 10/100/1000 ports with PoE or 16 10-GbE ports or 96 mini-GBICs, or a combination
Power supplies	2 open power-supply slots	Includes 1 x J8712A 1 open power-supply slot
Physical characteristics		
Dimensions (D x W x H)	45.09 x 44.45 x 17.53 cm (17.75 x 17.5 x 6.9 in.) (4U height)	45.09 x 44.45 x 17.53 cm (17.75 x 17.5 x 6.9 in.) (4U height)
Weight	10.68 kg (23.55 lb.)	15.54 kg (34.26 lb.)
Memory and processor		
Gigabit module	ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM	ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM
10G module	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM
Management module	Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM	Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
Performance		
Latency		
1000 Mb	<3.7 µs (FIFO 64-byte packets)	<3.7 µs (FIFO 64-byte packets)
10 Gbps	<2.1 µs (FIFO 64-byte packets)	<2.1 µs (FIFO 64-byte packets)
Throughput	Up to 214 million pps	Up to 214 million pps
Routing/Switching capacity	288 Gbps	288 Gbps
Switch fabric speed	346 Gbps	346 Gbps
Routing table size	10,000 entries	10,000 entries
Environment		
Operating temperature	0°C to 55°C (32°F to 131°F); 0°C to 40°C with J8705A, J8706A, or J8707A modules installed	0°C to 55°C (32°F to 131°F); 0°C to 40°C with J8705A, J8706A, or J8707A modules installed
Operating relative humidity	15% to 95% @ 55°C (131°F), non-condensing	15% to 95% @ 55°C (131°F), non-condensing
Non-operating/Storage temperature	–40°C to 70°C (–40°F to 158°F)	–40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity	15% to 95% @ 65°C (149°F), non-condensing	15% to 95% @ 65°C (149°F), non-condensing
Altitude	Up to 4.6 km (15,000 ft.)	Up to 4.6 km (15,000 ft.)
Acoustic	Power: 57 dB; pressure: 40.2 dB ISO 7779, ISO 9296	Power: 57 dB; pressure: 40.2 dB ISO 7779, ISO 9296
Electrical characteristics		
Description	Chassis ships without power supplies. Two power-supply slots available; two different power supplies available. See power-supply products for additional specifications.	One J8712A installed. One open power-supply slot available; two different power supplies available. See power-supply products for additional specifications.
Maximum heat dissipation	2,584 kJ/hr (2,450 BTU/hr) (max non-PoE) 3,903 kJ/hr (3,700 BTU/hr) (max using PoE)	2,584 kJ/hr (2,450 BTU/hr) (max non-PoE) 3,903 kJ/hr (3,700 BTU/hr) (max using PoE)
Voltage	100–127 VAC/200–240 VAC	100–127 VAC/200–240 VAC
Frequency	50/60 Hz	50/60 Hz
Notes	Power supplies must be ordered separately. One J8712A or J8713A can power the J8697A chassis. Heat dissipation does not include heat dissipated by the PoE powered devices themselves.	Heat dissipation does not include heat dissipated by the PoE powered devices themselves.
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	
Immunity		
EN	EN 55024, CISPR 24	EN 55024, CISPR 24
ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD	IEC 61000-4-2; 4 kV CD, 8 kV AD
Radiated	IEC 61000-4-3; 3 V/m	IEC 61000-4-3; 3 V/m
EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
Surge	IEC 61000-4-5; 1 kV/2 kV AC	IEC 61000-4-5; 1 kV/2 kV AC
Conducted	IEC 61000-4-6; 3 V	IEC 61000-4-6; 3 V
Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
Harmonics	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3

ProCurve Switch 5400zl/3500yl Series

Specifications (continued)

ProCurve Switch 5406zl Intelligent Edge (J8697A)

ProCurve Switch 5406zl-48G Intelligent Edge (J8699A)

Management

ProCurve Manager Plus; ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)

Notes

When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required.

Standards and protocols
(applies to both products)

Device management
RFC 1591 DNS (client)
HTML and telnet management

General protocols
IEEE 802.1ad Q-in-Q (Premium License)
IEEE 802.1D MAC Bridges
IEEE 802.1p Priority
IEEE 802.1Q VLANs
IEEE 802.1s Multiple Spanning Trees
IEEE 802.1v VLAN classification by Protocol and Port
IEEE 802.1w Rapid Reconfiguration of Spanning Tree
IEEE 802.3ad Link Aggregation Control Protocol (LACP)
IEEE 802.3af Power over Ethernet
IEEE 802.3x Flow Control
RFC 768 UDP
RFC 783 TFTP Protocol (revision 2)
RFC 792 ICMP
RFC 793 TCP
RFC 826 ARP
RFC 854 TELNET
RFC 868 Time Protocol
RFC 951 BOOTP
RFC 1058 RIPv1
RFC 1350 TFTP Protocol (revision 2)
RFC 1519 CIDR
RFC 1542 BOOTP Extensions
RFC 2030 Simple Network Time Protocol (SNTP) v4
RFC 2131 DHCP
RFC 2453 RIPv2
RFC 2548 (MS-RAS-Vendor only)
RFC 3046 DHCP Relay Agent Information Option
RFC 3576 Ext to RADIUS (CoA only)
RFC 3768 VRRP (Premium License)
RFC 4675 RADIUS VLAN & Priority
UDLD (Uni-directional Link Detection)

IP multicast
RFC 2362 PIM Sparse Mode (Premium License)
RFC 3376 IGMPv3 (host joins only)
RFC 3973 PIM Dense Mode (Premium License)

IPv6
RFC 1981 IPv6 Path MTU Discovery
RFC 2460 IPv6 Specification
RFC 2461 IPv6 Neighbor Discovery
RFC 2462 IPv6 Stateless Address Auto-configuration
RFC 2463 ICMPv6
RFC 2710 Multicast Listener Discovery (MLD) for IPv6
RFC 2925 Remote Operations MIB (Ping only)
RFC 3019 MLDv1 MIB
RFC 3315 DHCPv6 (client only)
RFC 3513 IPv6 Addressing Architecture
RFC 3596 DNS Extension for IPv6
RFC 3810 MLDv2 (host joins only)
RFC 4022 MIB for TCP
RFC 4113 MIB for UDP
RFC 4251 SSHv6 Architecture
RFC 4252 SSHv6 Authentication
RFC 4253 SSHv6 Transport Layer
RFC 4254 SSHv6 Connection
RFC 4293 MIB for IP
RFC 4419 Key Exchange for SSH
RFC 4541 IGMP & MLD Snooping Switch

MIBs
RFC 1213 MIB II
RFC 1493 Bridge MIB
RFC 1724 RIPv2 MIB
RFC 1850 OSPFv2 MIB
RFC 2021 RMONv2 MIB
RFC 2096 IP Forwarding Table MIB
RFC 2613 SMON MIB
RFC 2618 RADIUS Client MIB
RFC 2620 RADIUS Accounting MIB
RFC 2665 Ethernet-Like-MIB
RFC 2668 802.3 MAU MIB
RFC 2674 802.1p and IEEE 802.1Q Bridge MIB
RFC 2737 Entity MIB (Version 2)
RFC 2787 VRRP MIB
RFC 2863 The Interfaces Group MIB
RFC 2925 Ping MIB

Network management
IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm), and 9 (events)
RFC 3176 sFlow
ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED)
SNMPv1/v2c/v3
XRMON

OSPF
RFC 2328 OSPFv2 (Premium License)
RFC 3101 OSPF NSSA

QoS/Cos
RFC 2474 DiffServ Precedence, including 8 queues/port
RFC 2597 DiffServ Assured Forwarding (AF)
RFC 2598 DiffServ Expedited Forwarding (EF)

Security
IEEE 802.1X Port Based Network Access Control
RFC 1492 TACACS+
RFC 2865 RADIUS (client only)
RFC 2866 RADIUS Accounting
Secure Sockets Layer (SSL)
SSHv1/SSHv2 Secure Shell

ProCurve Switch 5400zl/3500yl Series

Specifications

	ProCurve Switch 5412zl Intelligent Edge (J8698A)	ProCurve Switch 5412zl-96G Intelligent Edge (J8700A)
Included accessories	N/A	4 ProCurve Switch zl 24-Port 10/100/1000 PoE Modules (J8702A) 2 ProCurve Switch zl 875W Power Supplies (J8712A)
Ports	12 open module slots	8 open module slots 96 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) with PoE Media type: IEEE Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only
	1 RS-232C DB-9 console port	1 RS-232C DB-9 console port
	Supports a maximum of 288 auto-sensing 10/100/1000 ports or 48 10-GbE ports or 288 mini-GBICs, or a combination	Supports a maximum of 288 auto-sensing 10/100/1000 ports with PoE or 32 10-GbE ports or 192 mini-GBICs, or a combination
Power supplies	4 open power-supply slots	Includes 2 x J8712A 2 open power-supply slots
Physical characteristics		
Dimensions (D x W x H)	45.09 x 44.45 x 30.73 cm (17.75 x 17.5 x 12.1 in.) (7U height)	45.09 x 44.45 x 30.73 cm (17.75 x 17.5 x 12.1 in.) (7U height)
Weight	15.85 kg (34.94 lb.)	26.31 kg (58 lb.)
Memory and processor		
Gigabit module	ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM	ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM
10G module	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM	ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM
Management module	Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM	Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
Performance		
Latency		
1000 Mb	<3.7 µs (FIFO 64-byte packets)	<3.7 µs (FIFO 64-byte packets)
10 Gbps	<2.1 µs (FIFO 64-byte packets)	<2.1 µs (FIFO 64-byte packets)
Throughput	Up to 428 million pps	Up to 428 million pps
Routing/Switching capacity	576 Gbps	576 Gbps
Switch fabric speed	692 Gbps	692 Gbps
Routing table size	10,000 entries	10,000 entries
Environment		
Operating temperature	0°C to 55°C (32°F to 131°F); 0°C to 40°C with J8705A, J8706A, or J8707A modules installed	0°C to 55°C (32°F to 131°F); 0°C to 40°C with J8705A, J8706A, or J8707A modules installed
Operating relative humidity	15% to 95% @ 55°C (131°F), non-condensing	15% to 95% @ 55°C (131°F), non-condensing
Non-operating/Storage temperature	–40°C to 70°C (–40°F to 158°F)	–40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity	15% to 95% @ 65°C (149°F), non-condensing	15% to 95% @ 65°C (149°F), non-condensing
Altitude	Up to 4.6 km (15,000 ft.)	Up to 4.6 km. (15,000 ft)
Acoustic	Power: 64 dB; pressure: 57.5 dB ISO 7779, ISO 9296	Power: 64 dB; pressure: 57.5 dB ISO 7779, ISO 9296
Electrical characteristics		
Description	Chassis ships without power supplies. Four power-supply slots available; two different power supplies available. See power-supply products for additional specifications.	Two J8712A installed. Two open power-supply slots available; two different power supplies available. See power-supply products for additional specifications.
Maximum heat dissipation	5,169 kJ/hr (4,900 BTU/hr) (max non-PoE) 7,807 kJ/hr (7,400 BTU/hr) (max using PoE)	5,169 kJ/hr (4,900 BTU/hr) (max non-PoE) 7,807 kJ/hr (7,400 BTU/hr) (max using PoE)
Voltage	100–127 VAC/200–240 VAC	100–127 VAC/200–240 VAC
Frequency	50/60 Hz	50/60 Hz
Notes	Power supplies must be ordered separately. A combination of two power supplies either J8712A or J8713A is required to power the J8698A chassis. Heat dissipation does not include heat dissipated by the PoE powered devices themselves.	Heat dissipation does not include heat dissipated by the PoE powered devices themselves.
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	
Immunity		
EN	EN 55024, CISPR 24	EN 55024, CISPR 24
ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD	IEC 61000-4-2; 4 kV CD, 8 kV AD
Radiated	IEC 61000-4-3; 3 V/m	IEC 61000-4-3; 3 V/m
EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
Surge	IEC 61000-4-5; 1 kV/2 kV AC	IEC 61000-4-5; 1 kV/2 kV AC
Conducted	IEC 61000-4-6; 3 V	IEC 61000-4-6; 3 V
Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
Harmonics	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3

ProCurve Switch 5400zl/3500yl Series

Specifications (continued)

ProCurve Switch 5412zl Intelligent Edge (J8698A)

ProCurve Switch 5412zl-96G Intelligent Edge (J8700A)

Management	ProCurve Manager Plus; ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)
Notes	When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required.

Standards and protocols
(applies to both products)

Device management
RFC 1591 DNS (client)
HTML and telnet management

General protocols
IEEE 802.1ad Q-in-Q (Premium License)
IEEE 802.1D MAC Bridges
IEEE 802.1p Priority
IEEE 802.1Q VLANs
IEEE 802.1s Multiple Spanning Trees
IEEE 802.1v VLAN classification by Protocol and Port
IEEE 802.1w Rapid Reconfiguration of Spanning Tree
IEEE 802.3ad Link Aggregation Control Protocol (LACP)
IEEE 802.3af Power over Ethernet
IEEE 802.3x Flow Control
RFC 768 UDP
RFC 783 TFTP Protocol (revision 2)
RFC 792 ICMP
RFC 793 TCP
RFC 826 ARP
RFC 854 TELNET
RFC 868 Time Protocol
RFC 951 BOOTP
RFC 1058 RIPv1
RFC 1350 TFTP Protocol (revision 2)
RFC 1519 CIDR
RFC 1542 BOOTP Extensions
RFC 2030 Simple Network Time Protocol (SNTP) v4
RFC 2131 DHCP
RFC 2453 RIPv2
RFC 2548 (MS-RAS-Vendor only)
RFC 3046 DHCP Relay Agent Information Option
RFC 3576 Ext to RADIUS (CoA only)
RFC 3768 VRRP (Premium License)
RFC 4675 RADIUS VLAN & Priority
UDLD (Uni-directional Link Detection)

IP multicast
RFC 2362 PIM Sparse Mode (Premium License)
RFC 3376 IGMPv3 (host joins only)
RFC 3973 PIM Dense Mode (Premium License)

IPv6
RFC 1981 IPv6 Path MTU Discovery
RFC 2460 IPv6 Specification
RFC 2461 IPv6 Neighbor Discovery
RFC 2462 IPv6 Stateless Address Auto-configuration
RFC 2463 ICMPv6
RFC 2710 Multicast Listener Discovery (MLD) for IPv6
RFC 2925 Remote Operations MIB (Ping only)
RFC 3019 MLDv1 MIB
RFC 3315 DHCPv6 (client only)
RFC 3513 IPv6 Addressing Architecture
RFC 3596 DNS Extension for IPv6
RFC 3810 MLDv2 (host joins only)
RFC 4022 MIB for TCP
RFC 4113 MIB for UDP
RFC 4251 SSHv6 Architecture
RFC 4252 SSHv6 Authentication
RFC 4253 SSHv6 Transport Layer
RFC 4254 SSHv6 Connection
RFC 4293 MIB for IP
RFC 4419 Key Exchange for SSH
RFC 4541 IGMP & MLD Snooping Switch

MIBs
RFC 1213 MIB II
RFC 1493 Bridge MIB
RFC 1724 RIPv2 MIB
RFC 1850 OSPFv2 MIB
RFC 2021 RMONv2 MIB
RFC 2096 IP Forwarding Table MIB
RFC 2613 SMON MIB
RFC 2618 RADIUS Client MIB
RFC 2620 RADIUS Accounting MIB
RFC 2665 Ethernet-Like-MIB
RFC 2668 802.3 MAU MIB
RFC 2674 802.1p and IEEE 802.1Q Bridge MIB
RFC 2737 Entity MIB (Version 2)
RFC 2787 VRRP MIB
RFC 2863 The Interfaces Group MIB
RFC 2925 Ping MIB

Network management
IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm), and 9 (events)
RFC 3176 sFlow
ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED)
SNMPv1/v2c/v3
XRMON

OSPF
RFC 2328 OSPFv2 (Premium License)
RFC 3101 OSPF NSSA

QoS/Cos
RFC 2474 DiffServ Precedence, including 8 queues/port
RFC 2597 DiffServ Assured Forwarding (AF)
RFC 2598 DiffServ Expedited Forwarding (EF)

Security
IEEE 802.1X Port Based Network Access Control
RFC 1492 TACACS+
RFC 2865 RADIUS (client only)
RFC 2866 RADIUS Accounting
Secure Sockets Layer (SSL)
SSHv1/SSHv2 Secure Shell

ProCurve Switch 5400zl/3500yl Series

Specifications

	ProCurve Switch 3500yl-24G-PWR Intelligent Edge (J8692A)	ProCurve Switch 3500yl-48G-PWR Intelligent Edge (J8693A)
Ports	1 open module slot 20 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 1 RS-232C DB-9 console port 4 dual-personality ports—each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10Base-T; IEEE 802.3u Type 100Base-TX; IEEE 802.3ab 1000Base-T Gigabit Ethernet) with PoE or an open mini-GBIC slot (for use with mini-GBIC transceivers) Supports a maximum of 4 10-GbE ports	1 open module slot 44 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) Media type: Auto-MDIX Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only 1 RS-232C DB-9 console port 4 dual-personality ports—each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10Base-T; IEEE 802.3u Type 100Base-TX; IEEE 802.3ab 1000Base-T Gigabit Ethernet) with PoE or an open mini-GBIC slot (for use with mini-GBIC transceivers) Supports a maximum of 4 10-GbE ports
Physical characteristics		
Dimensions (D x W x H)	39.2 x 44.3 x 4.4 cm (15.43 x 17.44 x 1.73 in.) (1U height)	43.0 x 44.3 x 4.4 cm (16.93 x 17.44 x 1.73 in.) (1U height)
Weight	6.4 kg (14.11 lb.)	7.3 kg (16.09 lb.)
Memory and processor		
10G module	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM
Management module	Stackable memory and processor: Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM	Stackable memory and processor: Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
Performance		
Latency		
1000 Mb	<3.7 µs (FIFO 64-byte packets)	<3.7 µs (FIFO 64-byte packets)
10 Gbps	<2.1 µs (FIFO 64-byte packets)	<2.1 µs (FIFO 64-byte packets)
Throughput	Up to 74 million pps	Up to 110 million pps
Routing/Switching capacity	101 Gbps	148 Gbps
Switch fabric speed	115 Gbps	173 Gbps
Routing table size	10,000 entries	10,000 entries
Environment		
Operating temperature	0° to 55°C (32°F to 131°F); 32°F to 40°C (104°F) when used with any X2 10-GbE	0° to 55°C (32°F to 131°F); 32°F to 40°C (104°F) when used with any X2 10-GbE
Operating relative humidity	15% to 95% at 40°C (104°F), non-condensing	15% to 95% at 40°C (104°F), non-condensing
Non-operating/Storage temperature	–40°C to 70°C (–40°F to 158°F)	–40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity	15% to 90% at 65°C (149°F), non-condensing	15% to 95% at 65°C (149°F), non-condensing
Altitude	Up to 4.6 km (15,000 ft.)	Up to 4.6 km (15,000 ft.)
Acoustic	Power: 52.7 dB; pressure: 44.8 dB ISO 7779, ISO 9296	Power: 55.1 dB; pressure: 45.3 dB ISO 7779, ISO 9296
Electrical characteristics		
Description	The switch automatically adjusts to any voltage between 100–127 and 200–240 volts and either 50 or 60 Hz	The switch automatically adjusts to any voltage between 100–127 and 200–240 volts and either 50 or 60 Hz
Maximum heat dissipation	706 kJ/hr (670 BTU/hr) (max non-PoE) 991 kJ/hr (940 BTU/hr) (max using PoE)	854 kJ/hr (810 BTU/hr) (max non-PoE) 1,149 kJ/hr (1,090 BTU/hr) (max using PoE)
Voltage	100–127 VAC/200–240 VAC	100–127 VAC/200–240 VAC
Current	10.0 A/5.0 A	10.0 A/5.0 A
Power consumption	723 W	759 W
Frequency	50/60 Hz	50/60 Hz
Notes	Maximum power draw if not using any PoE power is 200 W (1.8 A @ 110 V, 0.9 A @ 220V); full load switch only heat spec listed above subtracts heat dissipated in external PoE powered devices. Heat dissipation does not include heat dissipated by the PoE powered devices themselves.	Maximum power draw if not using any PoE power is 200 W (1.8 A @ 110 V, 0.9 A @ 220V). Heat dissipation does not include heat dissipated by the PoE powered devices themselves.
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	
Immunity		
EN	EN 55024, CISPR 24	EN 55024, CISPR 24
ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD	IEC 61000-4-2; 4 kV CD, 8 kV AD
Radiated	IEC 61000-4-3; 3 V/m	IEC 61000-4-3; 3 V/m
EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
Surge	IEC 61000-4-5; 1 kV/2 kV AC	IEC 61000-4-5; 1 kV/2 kV AC
Conducted	IEC 61000-4-6; 3 V	IEC 61000-4-6; 3 V
Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
Harmonics	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3

ProCurve Switch 5400zl/3500yl Series

Specifications (continued)

ProCurve Switch 3500yl-24G-PWR Intelligent Edge (J8692A)

ProCurve Switch 3500yl-48G-PWR Intelligent Edge (J8693A)

Management

ProCurve Manager Plus; ProCurve Manager (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)

Notes

When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required.
J8177B Gigabit 1000Base-T mini-GBIC is not supported on the 3500yl series switches.

Standards and protocols
(applies to both products)

Device management
RFC 1591 DNS (client)
HTML and telnet management

General protocols
IEEE 802.1ad Q-in-Q (Premium License)
IEEE 802.1D MAC Bridges
IEEE 802.1p Priority
IEEE 802.1Q VLANs
IEEE 802.1s Multiple Spanning Trees
IEEE 802.1v VLAN classification by Protocol and Port
IEEE 802.1w Rapid Reconfiguration of Spanning Tree
IEEE 802.3ad Link Aggregation Control Protocol (LACP)
IEEE 802.3af Power over Ethernet
IEEE 802.3x Flow Control
RFC 768 UDP
RFC 783 TFTP Protocol (revision 2)
RFC 792 ICMP
RFC 793 TCP
RFC 826 ARP
RFC 854 TELNET
RFC 868 Time Protocol
RFC 951 BOOTP
RFC 1058 RIPv1
RFC 1350 TFTP Protocol (revision 2)
RFC 1519 CIDR
RFC 1542 BOOTP Extensions
RFC 2030 Simple Network Time Protocol (SNTP) v4
RFC 2131 DHCP
RFC 2453 RIPv2
RFC 2548 (MS-RAS-Vendor only)
RFC 3046 DHCP Relay Agent Information Option
RFC 3576 Ext to RADIUS (CoA only)
RFC 3768 VRRP (Premium License)
RFC 4675 RADIUS VLAN & Priority
UDLD (Uni-directional Link Detection)

IP multicast
RFC 2362 PIM Sparse Mode (Premium License)
RFC 3376 IGMPv3 (host joins only)
RFC 3973 PIM Dense Mode (Premium License)

IPv6
RFC 1981 IPv6 Path MTU Discovery
RFC 2460 IPv6 Specification
RFC 2461 IPv6 Neighbor Discovery
RFC 2462 IPv6 Stateless Address Auto-configuration
RFC 2463 ICMPv6
RFC 2710 Multicast Listener Discovery (MLD) for IPv6
RFC 2925 Remote Operations MIB (Ping only)
RFC 3019 MLDv1 MIB
RFC 3315 DHCPv6 (client only)
RFC 3513 IPv6 Addressing Architecture
RFC 3596 DNS Extension for IPv6
RFC 3810 MLDv2 (host joins only)
RFC 4022 MIB for TCP
RFC 4113 MIB for UDP
RFC 4251 SSHv6 Architecture
RFC 4252 SSHv6 Authentication
RFC 4253 SSHv6 Transport Layer
RFC 4254 SSHv6 Connection
RFC 4293 MIB for IP
RFC 4419 Key Exchange for SSH
RFC 4541 IGMP & MLD Snooping Switch

MIBs
RFC 1213 MIB II
RFC 1493 Bridge MIB
RFC 1724 RIPv2 MIB
RFC 1850 OSPFv2 MIB
RFC 2021 RMONv2 MIB
RFC 2096 IP Forwarding Table MIB
RFC 2613 SMON MIB
RFC 2618 RADIUS Client MIB
RFC 2620 RADIUS Accounting MIB
RFC 2665 Ethernet-Like-MIB
RFC 2668 802.3 MAU MIB
RFC 2674 802.1p and IEEE 802.1Q Bridge MIB
RFC 2737 Entity MIB (Version 2)
RFC 2787 VRRP MIB
RFC 2863 The Interfaces Group MIB
RFC 2925 Ping MIB

Network management
IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm), and 9 (events)
RFC 3176 sFlow
ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED)
SNMPv1/v2c/v3
XRMON

OSPF
RFC 2328 OSPFv2 (Premium License)
RFC 3101 OSPF NSSA

QoS/Cos
RFC 2474 DiffServ Precedence, including 8 queues/port
RFC 2597 DiffServ Assured Forwarding (AF)
RFC 2598 DiffServ Expedited Forwarding (EF)

Security
IEEE 802.1X Port Based Network Access Control
RFC 1492 TACACS+
RFC 2865 RADIUS (client only)
RFC 2866 RADIUS Accounting
Secure Sockets Layer (SSL)
SSHv1/SSHv2 Secure Shell

ProCurve Switch 5400zl/3500yl Series Modules

zl Modules

ProCurve Switch zl 4-Port 10-GbE X2 Module (J8707A)

4-port 10-GbE X2 module for zl series switches

Ports
4 open 10-GbE X2 transceiver slots

Physical characteristics
Dimensions (D x W x H): 26.16 x 20.65 x 4.45 cm (10.3 x 8.13 x 1.75 in.)
Weight: 0.79 kg (1.74 lb.)

Environment
Operating temperature: 0°C to 40°C (32°F to 104°F)

Notes
When installed in a zl chassis, the J8707A module limits the operating temperature range of the chassis to 0°C to 40°C (32°F to 104°F).

ProCurve Switch zl 24-Port 10/100/1000 PoE Module (J8702A)

24-port 10/100/1000 PoE module for zl series switches

Ports
24 RJ-45 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T; IEEE 802.3u Type 100Base-TX; IEEE 802.3ab Type 1000Base-T)
Media type: IEEE Auto-MDI/MDIX
Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only

Physical characteristics
Dimensions (D x W x H): 26.16 x 20.65 x 4.45 cm (10.3 x 8.13 x 1.75 in.)
Weight: 0.98 kg (2.16 lb.)

Cabling
Type:
- 1000Base-T: Category 5 (5E or better recommended), 100 Ω differential 4-pair unshielded twisted pair (UTP) or shielded twisted pair (STP) balanced, complying with IEEE 802.3ab 1000Base-T

ProCurve Switch zl 20-Port 10/100/1000 + 4-Port Mini-GBIC Module (J8705A)

20-port 10/100/1000 PoE + 4-port mini-GBIC module for zl series switches

Ports
4 open mini-GBIC (SFP) slots
20 RJ-45 auto-sensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T; IEEE 802.3u type 100Base-TX; IEEE 802.3ab Type 1000Base-T)
Media type: IEEE Auto-MDIX
Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only

Physical characteristics
Dimensions (D x W x H): 26.16 x 20.65 x 4.45 cm (10.3 x 8.13 x 1.75 in.)
Weight: 1 kg (2.2 lb.)

Notes
When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required.
When installed in a zl chassis, the J8705A module limits the operating temperature range of the chassis to 0°C to 40°C (32°F to 104°F).

ProCurve Switch zl 4-Port 10-GbE CX4 Module (J8708A)

4-port 10-GbE CX4 module for zl series switches

Ports
4 CX-4 10-GbE ports (IEEE 802.3ak Type 10Gbase-CX4)
Duplex: full only

Physical characteristics
Dimensions (D x W x H): 26.16 x 20.65 x 4.45 cm (10.3 x 8.13 x 1.75 in.)
Weight: 0.79 kg (1.74 lb.)

Environment
Operating temperature: 0°C to 55°C (32°F to 131°F)

Cabling
Maximum distance:
15 m using CX4 cable
300 m using optical media converters and multimode fiber cable

Notes
Use CX4 10-GbE cable (0.5 m–15 m) or ProCurve 10-GbE CX4 Media Converter (J8439A).
No CX4 cables are included with this module.

Services for accessories are covered under the product in which they are installed.

ProCurve Switch 5400zl/3500yl Series Modules

zl Modules (continued)

ProCurve Switch zl 24-Port Mini-GBIC Module (J8706A)

24-port mini-GBIC module for zl series switches

Ports
24 open mini-GBIC (SFP) slots

Physical characteristics
Dimensions (D x W x H): 26.16 x 20.65 x 4.45 cm (10.3 x 8.13 x 1.75 in.)
Weight: 0.91 kg (2.01 lb.)

Notes
When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required.
When installed in a zl chassis, the J8706A module limits the operating temperature range of the chassis to 0°C to 40°C (32°F to 104°F).

yl Modules

ProCurve Switch yl 10-GbE 2-Port CX4 + 2-Port X2 Module (J8694A)

10-GbE module with two fixed CX4 ports and two X2 slots for ProCurve Switch 3500yl series and Switch 6200yl-24G-mGBIC

Ports
2 open 10-GbE X2 transceiver slots
2 10-GbE ports (IEEE 802.3ak Type 10Gbase-CX4)
Duplex: full only

Physical characteristics
Dimensions (D x W x H): 19.7 x 19.1 x 36.3 cm (7.76 x 7.52 x 14.29 in.)
Weight: 0.7 kg (1.54 lb.)

Environment
Operating temperature: 0°C to 55°C (32°F to 131°F)
Operating relative humidity: 15% to 95%, non-condensing
Non-operating/Storage temperature: –40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity: 15% to 90%, non-condensing

Cabling
Maximum distance:
CX4: 15 m using CX4 cable or 300 m using media converter with ribbon MMF

Notes
Only the two fixed CX4 ports on this module support ProCurve 10-GbE CX4 Media Converter (J8439A).
Operating temperature is 0°C to 40°C (32°F to 104°F) if any X2 10-GbE optic or transceiver is inserted in any X2 slot.
One 0.5 m CX4 cable is included.

Licenses

Premium License for Switch 3500 Series (J8993A)

License to enable OSPFv2, PIM Dense mode, PIM Sparse mode, VRRP, and QinQ in the ProCurve 3500yl switch.

Notes
The following features are included in this license:

- OSPFv2
- PIM Dense mode
- PIM Sparse mode
- VRRP
- QinQ (IEEE 802.1ad)

Premium License for Switch 5400 Series (J8994A)

License to enable OSPFv2, PIM Dense mode, PIM Sparse mode, VRRP, and QinQ in the ProCurve 5400zl switch.

Notes
The following features are included in this license:

- OSPFv2
- PIM Dense mode
- PIM Sparse mode
- VRRP
- QinQ (IEEE 802.1ad)

Services for accessories are covered under the product in which they are installed.

ProCurve Switch 5400zl/3500yl Series Modules

Power Supplies

ProCurve Switch zl 1500W Power Supply (J8713A)

High-power 1500 W power supply for zl series switches. Supplies 900 W for PoE power plus 600 W for switch power. 200–240 V only.

Physical characteristics
Dimensions (D x W x H): 15.37 x 18.92 x 12.95 cm (6.05 x 7.45 x 5.1 in.)
Weight: 3.4 kg (7.5 lb.)

Environment
Operating temperature: 0°C to 55°C (32°F to 131°F)
Operating relative humidity: 15% to 95%, non-condensing
Non-operating/Storage temperature: –40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity: 15% to 95%, non-condensing
Altitude: up to 3 km (10,000 ft.)

Electrical characteristics
Voltage: 200–240 VAC
Current: 10 A
Frequency: 50/60 Hz
Power consumption: 1800 W

Notes
200–240 V only. Installation of the J8713A reduces the chassis altitude specification to 3677 m (10,000 ft.).
J8713A supplies 600 W chassis power and 900 W PoE power.
See the Ordering Guide for more details on power supply selection for PoE power. Units shipped to North America include a NEMA L6-20P twist lock power cord. Non-locking NEMA 6-20P optionally available—see the Ordering Guide for more details.
When used in the J8714A power shelf, the following specs apply (at full load):
- Heat dissipation: 475 kJ/hr (450 BTU/hr) @ 220 V
- Maximum current: 5.1 A @ 220 V

ProCurve Switch zl 875W Power Supply (J8712A)

Standard 875 W power supply for zl series switches. Supplies 273 W for PoE power plus 600 W for switch power.

Physical characteristics
Dimensions (D x W x H): 15.37 x 18.92 x 12.95 cm (6.05 x 7.45 x 5.1 in.)
Weight: 3.2 kg (7.05 lb.)

Environment
Operating temperature: 0°C to 55°C (32°F to 131°F)
Operating relative humidity: 15% to 95%, non-condensing
Non-operating/Storage temperature: –40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity: 15% to 95%, non-condensing
Altitude: up to 3 km (10,000 ft.)

Electrical characteristics
Voltage: 100–127 VAC/200–240 VAC
Current: 12 A/5.7 A
Frequency: 50/60 Hz
Power consumption: 1050 W

Notes
J8712A supplies 600 W chassis power and 273 W PoE power.
One J8712A can power the J8697A chassis.
Two J8712A supplies are required to power the J8698A chassis.
See the Ordering Guide for more details on power supply selection for PoE power.
When used in the J8714A power shelf, the following specs apply (at full load):
- Heat dissipation: 263 kJ/hr (250 BTU/hr) @ 110 V, 222 kJ/hr (210 BTU/hr) @ 220 V
- Maximum current: 3.2 A @ 110 V, 1.7 A @ 220 V

NEW ProCurve 620 Redundant/External Power Supply (J8696A)

Provides redundant system power and/or extra PoE power for up to two switches simultaneously

Ports
2 RPS ports; 195 W available per port
2 EPS ports; 398 W available per port

Physical characteristics
Dimensions (D x W x H): 39.12 x 44.2 x 4.39 cm (15.4 x 17.4 x 1.73 in.) 1U height
Weight: 6.89 kg (15.2 lb.)

Electrical characteristics
Maximum heat dissipation: 422 kJ/hr (400 BTU/hr) for the actual 620 itself. PoE-powered device heat dissipation assumed to be outside the 620.
Voltage: 100–127 VAC/200–240 VAC
Current: 16 A/8 A
Power consumption: 1440 W
RPS power: 390 W
PoE power: 796 W
RPS: 12 V
PoE: –50 V
Frequency: 50/60 Hz
Note: Above figures are for max. RPS and PoE power being supplied to 2 switches simultaneously. 200–240 V power cords shipped with the 620 have a wall plug rated as close to 13 A as specific country standards allow.

Notes
The ProCurve 620 supports the ProCurve 2900 series (RPS), 3500yl series (RPS/PoE), and 6200yl (RPS) switches.
The ProCurve 5400zl switches are not supported.
The ProCurve 620 includes 4 2-meter RPS/EPS cables. These cables can be used to carry either RPS or PoE power to the switch being powered.

NEW ProCurve Switch zl Power Supply Shelf (J8714A)

A rack-mountable chassis with two slots for Switch zl power supplies to supply additional PoE power to a zl switch beyond what can be provided by the switch internal power supplies alone

Ports
2 EPS ports
PoE power available depends on power supplies installed

Physical characteristics
Dimensions (D x W x H): 24.71 x 44.3 x 13.2 cm (9.73 x 17.44 x 5.2 in.) (3U height)
Weight: 4.2 kg (9.26 lb.) (no power supplies installed)

Environment
Operating temperature: 0°C to 55°C (32°F to 131°F)
Operating relative humidity: 15% to 95% at 40°C (104°F), non-condensing
Non-operating/Storage temperature: –40°C to 70°C (–40°F to 158°F)
Non-operating/Storage relative humidity: 15% to 95% at 40°C (104°F), non-condensing
Altitude: up to 3 km (10,000 ft.)
Acoustic: power: 52.9 dB, pressure: 42.9 dB

Electrical characteristics
Description: Power draw and heat dissipation for the power shelf are dependent on the power supplies installed.
Note: For heat dissipation and power requirements of the power shelf, find and add together these figures for the 1 or 2 power supplies actually installed.

Notes
The ProCurve Switch zl Power Supply Shelf has two slots for zl power supplies. It supplies PoE power only to zl switches. For yl switches, see the ProCurve 620 Redundant/External Power Supply.
Power shelf depth includes 1.9 cm (0.75 in.) due to the power supply handles.
Power supplies not included.

Services for accessories are covered under the product in which they are installed.

ProCurve Switch 5400zl/3500yl Series Modules

Additional accessories

ProCurve Wireless Edge Services zl Module (J9051A)

ProCurve Redundant Wireless Services zl Module (J9052A)

ProCurve Gigabit-SX-LC Mini-GBIC (J4858C)

ProCurve Gigabit-LX-LC Mini-GBIC (J4859C)

ProCurve Gigabit-LH-LC Mini-GBIC (J4860C)

ProCurve Gigabit 1000Base-T Mini-GBIC (J8177B)*

ProCurve 100-FX SFP-LC Transceiver (J9054B)

ProCurve 10-GbE X2-SC SR Optic (J8436A)

ProCurve 10-GbE X2-SC LR Optic (J8437A)

ProCurve 10-GbE X2-SC ER Optic (J8438A)

ProCurve 10-GbE CX4 Media Converter (J8439A)

ProCurve 10-GbE X2-CX4 Transceiver (J8440B)

ProCurve Identity Driven Manager 2.2 base product—500-user license (J9012A)

ProCurve Manager Plus 2.2 unlimited-device license (J9059A)

* Not supported on dual-personality ports on 3500yl series.

For more information

To learn more about ProCurve Networking, please visit **www.procurve.eu**

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ProCurve Networking by HP